

**PROBOSCIDOTYLUS CARVALHOI, A NEW GENUS AND  
SPECIES OF SEXUALLY DIMORPHIC PLANT BUG FROM MEXICO  
(HETEROPTERA: MIRIDAE: ORTHOTYLINAE)**

THOMAS J. HENRY

Systematic Entomology Laboratory, Plant Sciences Institute, Agricultural Research Service, United States Department of Agriculture, % National Museum of Natural History, MRC-168, Washington, D.C. 20560.

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*Abstract.*—The new orthotyline genus and species *Proboscidotylus carvalhoi* are described from specimens collected in Veracruz, Mexico. This new mirid, with the male possessing an elongate tubercle at the apex of the tylus, represents one of the most unusual cases of sexual dimorphism in the subfamily Orthotylinae. An adult habitus drawing, illustrations of male genitalia, and scanning electron micrographs of selected structures are furnished to aid in recognition, and relationships are discussed.

*Key Words:* Insecta, Heteroptera, Orthotylinae, new genus, new species, sexual dimorphism, Mexico, Veracruz

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The subfamily Orthotylinae is one of the largest and most poorly studied groups in the Miridae, especially in the Neotropics. Five tribes are recognized (Austromirini, Halticini, Ceratocapsini, Nichomachini, and Orthotylini), but this level of the classification is unstable (Schuh 1974, Henry 1994) and a worldwide analysis is needed to establish the monophyly of these orthotyline tribes. Discovery of a bizarre new genus and species fitting into Schuh's (1974) *Zanchius* group (Orthotylini) adds new and corroborative character information that should be useful to future phylogenetic investigations of the subfamily.

Herein, I describe the new genus and new species *Proboscidotylus carvalhoi*, provide an adult habitus drawing, illustrations of male genitalia, and SEM micrographs of pertinent structures, and discuss the relationship of this peculiar new genus to other orthotyline genera.

This paper and the new species described within it are dedicated to the memory of

Dr. José Candido de Melo Carvalho, who published on the Miridae for more than 50 years. Landmarks in an outstanding career were his 1113-page world catalog of the Miridae (1957-1960), keys to the mirid genera of the world (1955), and many papers in which he described more than 385 genera and 2080 species (Carvalho and Froeschner 1987, 1990, in press). It is hard to imagine that José's voluminous contributions to our knowledge of this large and diverse family will ever be surpassed.

***Proboscidotylus* Henry, NEW GENUS**

Type species.—*Proboscidotylus carvalhoi* Henry, new species.

Diagnosis.—This genus can be recognized by the strongly swollen frons (Figs. 2, 4), prominent tylus, and the scattered black scalelike setae on the hemelytra (Fig. 6). Most distinctive, however, are the peculiar autapomorphic structures found only in males. The elongate, apically setose, tubercle arising from the apex of the tylus (Fig.

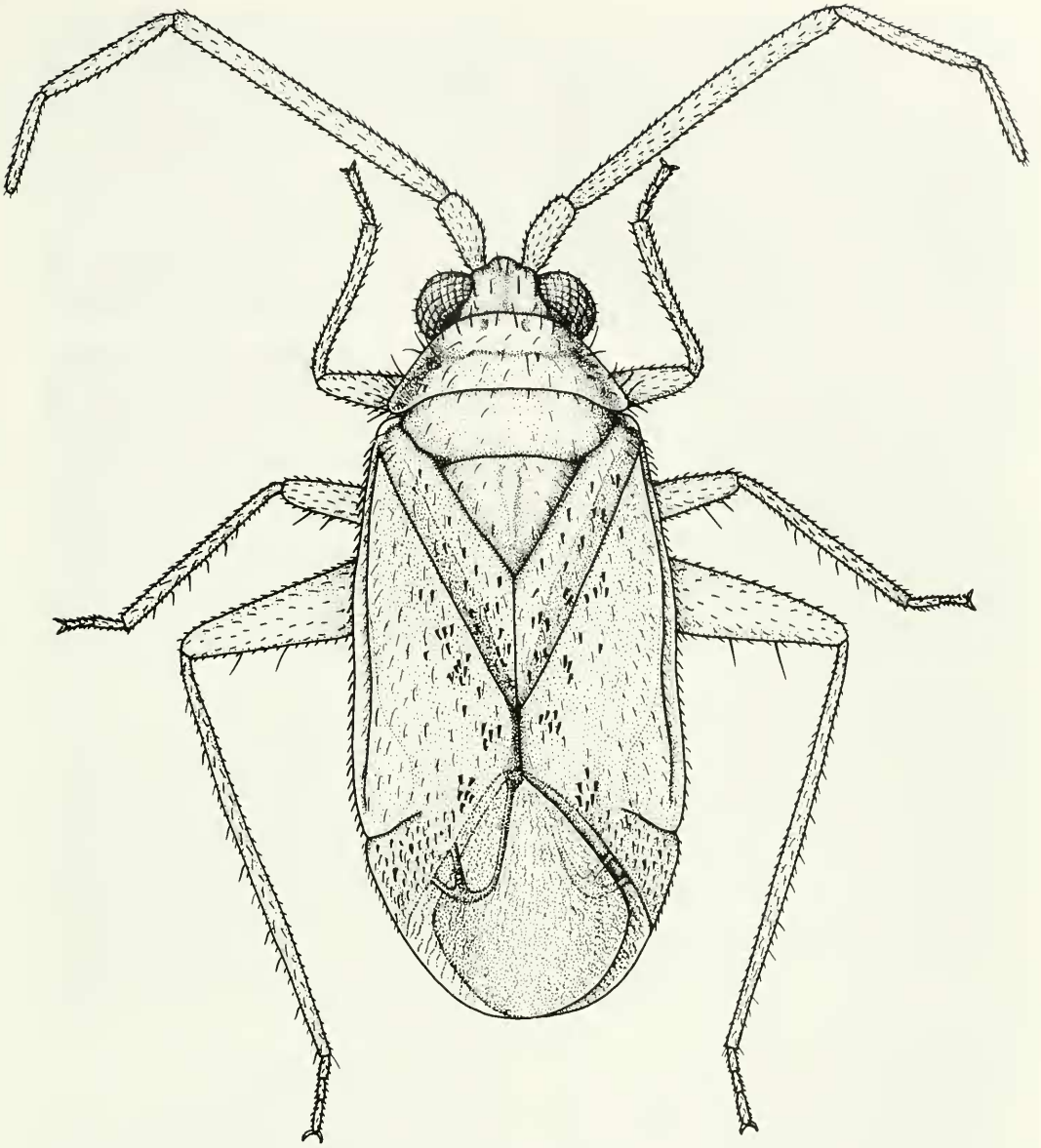
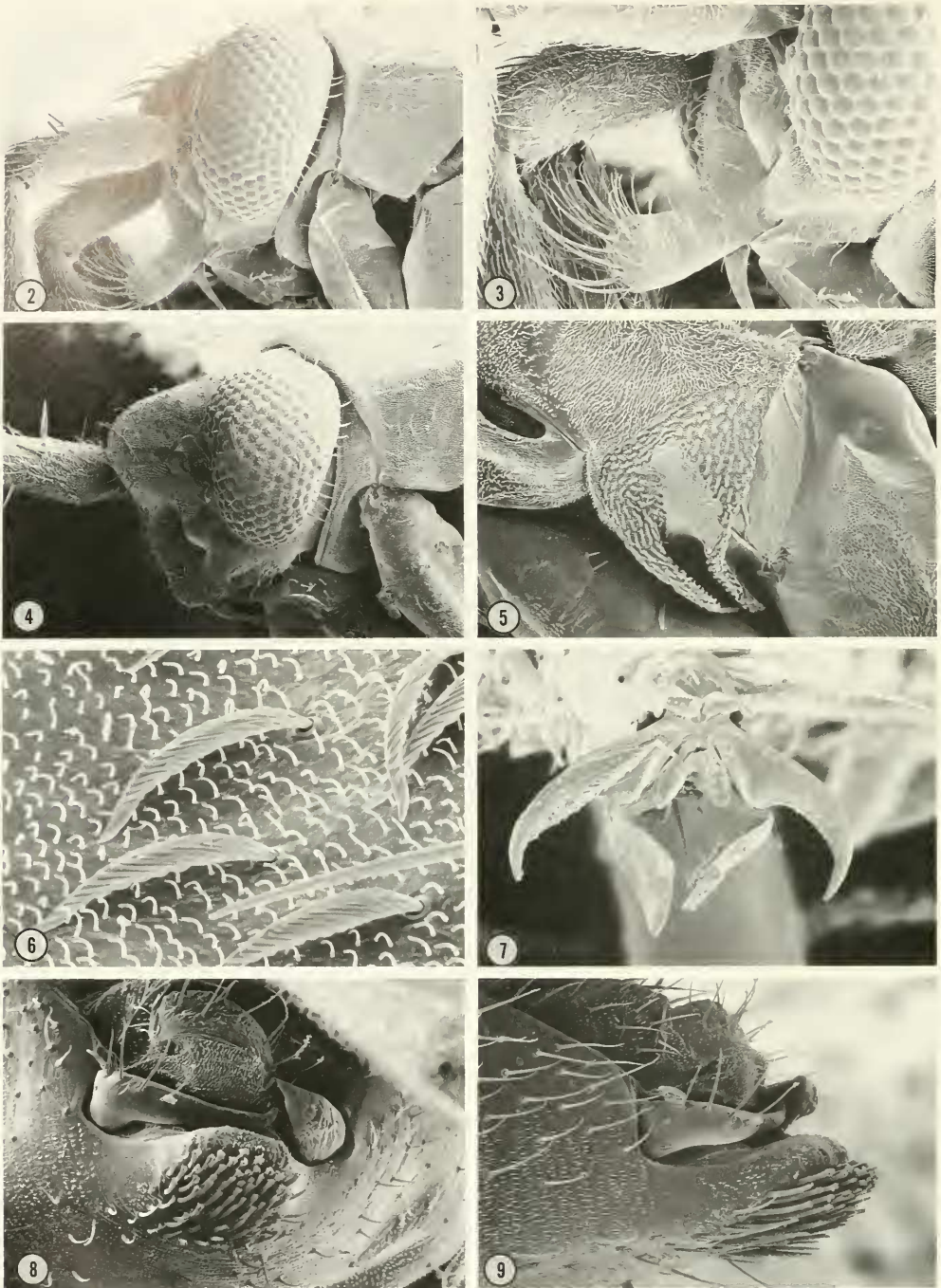


Fig. 1. Dorsal habitus of *Proboscidotylus carvalhoi*, male.

2, 3) and the tuberclelike process bearing a field of stout bristlelike setae on the genital capsule (Figs. 8, 9) are unique in the subfamily Orthotylinae and support the monophyly of *Proboscidotylus*.

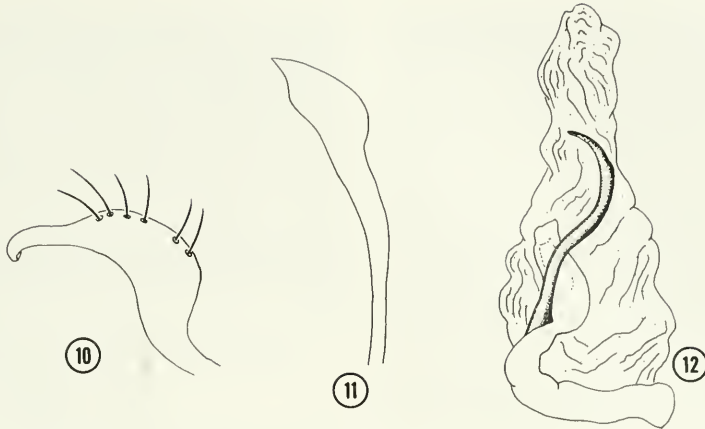
Description.—Orthotylinae: Orthotylini. Small, delicate (Fig. 1), length 2.64–3.04 mm. Head (Figs. 2–4) broader than long;

interocular area in female flattened, in male weakly depressed; frons abruptly and strongly swollen in both sexes but more so in females (Fig. 4), then flattened to meet base of pronounced, broadly rounded tylus; male with apex of tylus extended into an elongate, apically rounded tubercle, having long dorsally directed setae distally (Figs. 2,



Figs. 2-9. *Proboscidotylus carvalhoi*. 2, head, lateral aspect of male (150 $\times$ ). 3, lateral aspect of male tylus (260 $\times$ ). 4, head, lateral aspect of female (151 $\times$ ). 5, ostiolar area (359 $\times$ ). 6, scalelike setae of hemelytra (1610 $\times$ ). 7, claw (1040 $\times$ ). 8, male genital capsule, caudal aspect (426 $\times$ ). 9, male genital capsule, lateral aspect (447 $\times$ ).





Figs. 10–12. Male genitalia. 10, left paramere. 11, right paramere. 12, vesica.

3), tubercle absent in female; eye prominent, oblong oval, strongly faceted, occupying all but lowermost edge of head in lateral aspect, posterior margin nearly touching anterior margin of pronotum, set with scattered short setae, posterior lateral margin with a row of stout, erect setae. Rostrum extending nearly to bases of metacoxae. Antenna slender; segment I shortest, stoutest; segment II slender, more than 2 times length of segment III in males, less than 2 times length of segment III in females; segment III longer than segment IV. Pronotum trapeziform, collar absent, much broader than long, with a transverse impression through middle separating calli from disc; posterior width much greater than anterior width; anterior angles rounded; lateral margins straight and angled outward posteriorly, margins weakly carinate; pleural area flattened, subquadrate; posterior margin deeply sinuate; calli weakly swollen. Scutellum flattened, equilateral; mesoscutum wide, about two thirds as long as scutellum, broadly exposed. Hemelytron hyaline, weakly sinuate laterally through middle in males, more nearly straight or weakly rounded in females; set with relatively long, semierect simple setae, sparsely intermixed with flattened, apically acute, scalelike, black setae (Fig. 6) on clavus, corium, and cuneus;

cuneus about as long as wide; membrane hyaline, broadly rounded apically, with two closed cells. Ventral surface weakly shining, with scattered simple setae. Ostiolar area (Fig. 5) small, auricle roughly triangular, margins bordered with modified evaporative or mycoid surface. Legs slender; tibial spines short, indistinct; tarsi three segmented; claws (Fig. 7) slender, apically recurved, parempodia broad and convergent. Male genital capsule (Figs. 8, 9) small, apically pointed, with a broad process or tubercle arising below basal margin of aperture bearing a field of stout, apically blunt, bristlelike (and likely glandular) setae. Left paramere (Fig. 10) elongate, extended transversely into an apically acute, slender arm; right paramere (Fig. 11) oval, apically acute; vesica (Fig. 12) membranous, bearing a single, slender, apically acute and curved spiculum, secondary gonopore absent or indistinct.

Remarks.—Relationships of the New World Orthotylinae are insufficiently known to fully place *Proboscidotylus* in a phylogenetic context. This genus belongs in the tribe Orthotylini as it is now defined and can be assigned to Schuh's (1974) *Zanchius* group, members of which have a general delicate body structure, flattened appearance, hyaline hemelytra, and a vesica lack-

ing spiculi (although some taxa appear to have at least one spiculum, including *Proboscidotylus carvalhoi*). I add to these diagnostic characters a broadly exposed mesoscutum (resulting in part from a deeply sinuate posterior pronotal margin) and a blunt, apically extended process on the male genital capsule below the caudal edge of the aperture. This combination of characters is unique in the Orthotylinae and suggests that members of this group warrant placement in a separate tribe. Such an action, however, needs to await a comprehensive study of the subfamily.

Neotropical genera that Schuh (1974) placed in the *Zanchius* group are *Brasiliomiris* Carvalho, *Hyalochloria* Reuter, *Itacoris* Carvalho, *Jobertus* Distant, and *Parapropa* Distant. To this list, in addition to *Proboscidotylus*, I add *Saileria* Hsiao and *Diaphnocois* Kelton.

In Knight's (1968) key to western U.S. genera, *Proboscidotylus* will run to either *Squamocoris* Knight or *Melanotrichus* Reuter based on head and eye characteristics and the presence of scalelike setae on the hemelytra. In Carvalho (1955), it will key to *Parthenicus* Reuter, if the head is said to lack a well-defined posterior margin, or, if the posterior margin is considered well defined, to *Ilnacora* Reuter having black, scalelike, dorsal setae and antennal segment I subequal to the width of the vertex.

Only a few New World orthotyline genera bear black, scalelike hemelytral setae (e.g. *Brooksetta* Kelton, *Ilnacora*, *Ilnacorella* Knight, *Macrotlyoides* Van Duzee, and *Parthenicus*). *Proboscidotylus*, however, appears to have little to do with these taxa based on overall morphology and male genitalia.

Strong sexual dimorphism is uncommon in the Orthotylinae. Although hemelytral brachyptery or microptery is common in females of some taxa (e.g. *Ceratocapsus* Reuter, *sensu lato*), other structural differences between the sexes are rare. The primary exception occurs in the Neotropical

genus *Hyalochloria* Reuter, in which males always have one or two stout, often decurved spines on the basal  $\frac{1}{3}$  of the second antennal segment (Henry 1978). *Proboscidotylus* provides another striking example of sexual dimorphism, with the male bearing an elongate tylar process and a blunt genital tubercle covered by a field of stout apically blunt and, perhaps, glandular setae.

***Proboscidotylus carvalhoi* Henry,  
NEW SPECIES  
Figs. 1-12**

**Diagnosis.**—This species is recognized by the overall pale brownish-yellow coloration, strongly swollen frons (Figs. 2, 4), and hyaline hemelytra possessing scattered black, scalelike setae (Fig. 6), as well as by the generic characters discussed above.

**Description.**—Male (n = 4): Length 2.68–2.84 mm, width 1.20–1.26 mm; overall coloration pale brownish yellow. **Head:** Weakly shining, with scattered erect setae; width 0.64–0.66 mm, vertex (interocular width) 0.24–0.28 mm, length of setigerous tubercle on tylus about 0.10 mm, apex with a cluster of long, erect, simple setae. **Rostrum:** Length 0.74–0.78 mm, extending nearly to bases of metacoxae. **Antenna:** Segment I, length 0.28–0.30 mm; II, 1.20–1.24 mm; III, 0.56–0.64 mm; IV, 0.34–0.40 mm. **Pronotum:** Length 0.28–0.30 mm, basal width 0.84–0.86 mm. Scutellum and mesoscutum with scattered erect and semierect simple setae. **Hemelytron:** Translucent pale brownish yellow, clothed with numerous semierect simple setae, intermixed with flattened, apically acute, scalelike, black setae on clavus, corium, and inner angle of cuneus. **Ventral surface:** Shiny pale brownish yellow, with scattered simple setae, especially on abdomen. **Male genitalia:** Genital capsule small, tapered apically, ending in a broad setigerous process or tubercle; left paramere (Fig. 10), right paramere (Fig. 11), and vesica (Fig. 12) as described under genus.

**Female** (n = 8): Length 2.64–3.04 mm,

width 1.24–1.28 mm. *Head*: Width 0.60–0.62 mm, vertex 0.28–0.30 mm. *Rostrum*: Length 0.80–0.86 mm. *Antenna*: Segment I, length 0.30–0.32 mm; II, 1.12–1.20 mm; III, 0.74–0.78 mm; IV, 0.40–0.46 mm. *Pro-notum*: Length 0.28–0.32 mm, basal width 0.84–0.88 mm.

Very similar to male in overall shape and coloration, differing in lacking the elongate, setigerous tubercle at the apex of the frons and having a more strongly swollen frons (Fig. 4).

Host.—Unknown.

*Etymology*.—The specific epithet of this unusual species is named in memory of my good friend and colleague Dr. José C. M. Carvalho.

*Type data*.—Holotype ♂, Mexico: Veracruz, Los Tuxtlas Estac. Biol., N of Cate-maco, 16–19 Sept. 1989, E. Barrera, T. J. Henry, and I. M. Kerzhner colls., taken at incandescent porch light (USNM [U.S. National Museum of Natural History, Washington, D.C.]). Paratypes: 4 ♂♂, 8 ♀♀, same data as for holotype (UNAM [Universidad Nacional Autónoma de México, México, D.F.], USNM).

Other specimens examined.—1 ♂, 1 ♀, same data as for holotype, prepared for scanning electron microscope investigations; 1 ♂, with abdomen missing (USNM).

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